

REMARKS

Favorable consideration of this application is respectfully requested.

Claims 1 and 11-23 are presently active in this application. Original Claims 2-10 have been canceled without prejudice or disclaimer. New Claims 11-23 have been added without the introduction of any new matter to provide Applicants with claims having a scope of protection to which they are entitled.

New Claim 11 clearly defines that the active layer is directly formed on the first clad layer, the second clad layer is directly formed on the active layer, and the defect layer is directly formed on the second clad layer.

Moreover new Claim 12 clearly defines that the first clad layer is directly formed on the first defect layer, the active layer is directly formed on the first clad layer, the second clad layer is directly formed on the active layer, and the second defect layer is directly formed on the second clad layer.

New Claim 22 is like new Claim 11 except that it recites a layer having a defect region, instead of the current diffusion layer. New Claim 23 is like new Claim 12 except that it recites a first layer having a defect region and a second layer having a defect region, instead of the current diffusion layer.

Page 30, lines 32, of the specification disclose that the dense defect-injected layer is preferably of 10 nm or more in thickness. It is clear to those of ordinary skill in the art that a 10 nm thick layer can be a part of another layer such as the current diffusion layer or any layer provided between the upper clad layer and the current diffusion layer.

These claimed configurations and the configuration of modified Claim 1 are completely

different from and not disclosed in Scifres.

The dense defect-injected layer of the present invention is made so as to purposefully include defects so that crystals are disconnected from each other by the defects.

In contrast, the Strain layer 27 of Scifres is made so that crystals are strained but connected to each other due to no existence of defects.

The defects 37 discussed in column 4, lines 58 to 60 of Scifres are produced in the cladding layer 26 during epitaxial crystal growth which are pinned by the strain layer 27 and prevented from reaching the active region 29.

These defects 37 are different from the crystallization fault 40 or 40a due to wire bounding, discussed at page 10, lines 4 to 36, of the present specification because strain layer 27 of Scifres cannot prevent such faults due to wire bonding from reaching the active region 29. This is because strain layer 27 is made so that crystals are strained but connected to each other due and no defects or disconnections, exist. Thus, such faults can reach the active region 29 via the strained crystals connected to each other.

On the contrary, the dense defect-injected layer 30 of the present invention is made to include defect so that crystals are disconnected from each other by the defects. Therefore, such faults 40a cannot reach the active layer 15 due to the disconnected crystals, as shown in FIG. 4B.

The difference in function between the dense defect-injected layer of the present invention and the strain layer 27 of Scifres is illustrated in the attached sketch.

In Scifres, the defects 37 are produced in the cladding layer 25 during epitaxial crystal growth. These defects 37 are pinned by the strain layer 27 and prevented from reaching the active region 29. In contrast, externally injected defects or faults due to wire bonding, etc., reach

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the active region 29, as indicated by the thick arrow.

Contrary to this, in the present invention, the dense defect-injected layer 30 including defects A will prevent externally injected defects 40a and also defects B produced during epitaxial crystal growth in the current diffusion layer 17 from reaching the active region as indicated by the thick arrows.

In light of the above, an early and favorable examination on the merits as to the presently active Claims 1 and 11-23 is respectfully requested.

Respectfully submitted,

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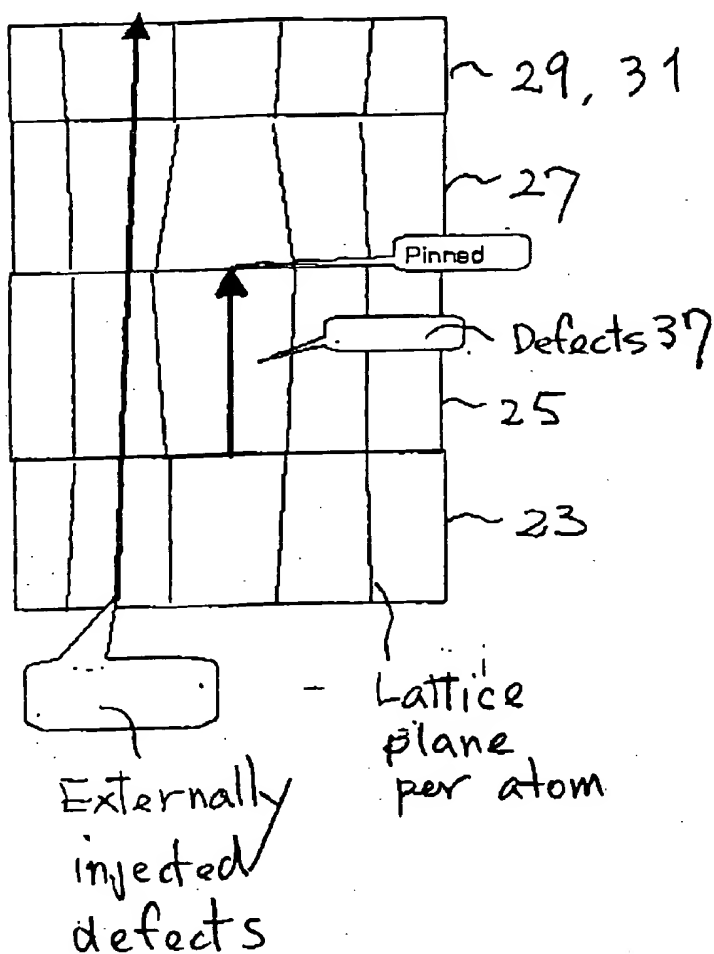


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SKETCH

Scifres



Present Invention

